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Faculty Summit **2017**



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2017

Artificial Conversational Intuition

Cristian Danescu-Niculescu-Mizil
Cornell University

Artificial Conversational Intuition

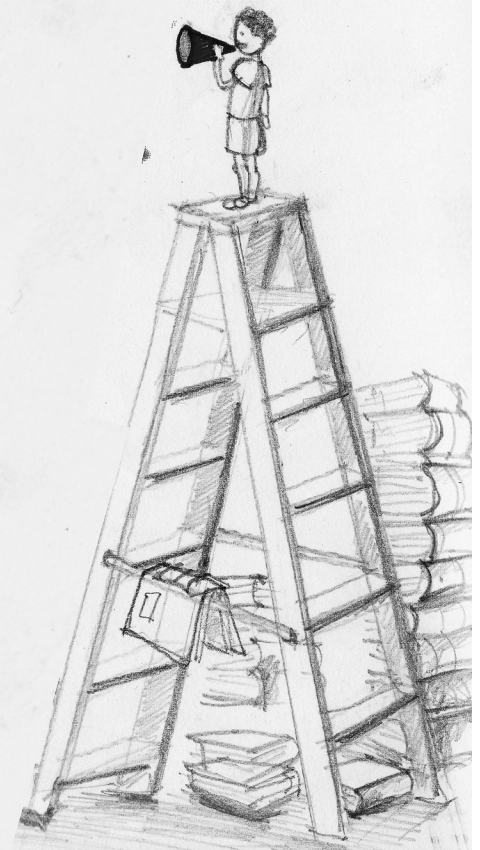
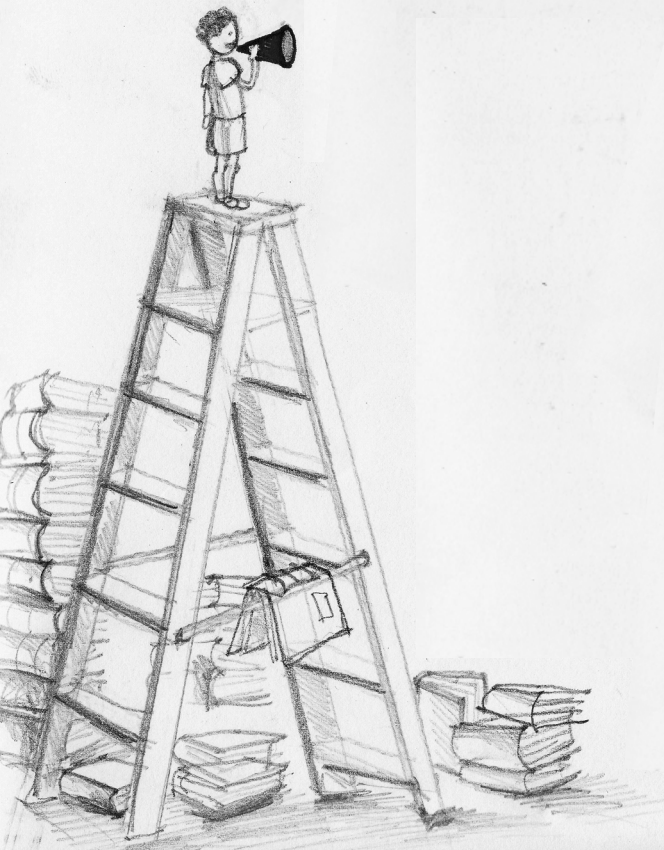
Cristian Danescu-Niculescu-Mizil

Cornell University

Microsoft Research Faculty Summit 2017

Conversations take place on two channels

1: Directly communicating information



Conversations take place on two channels

- 1: Directly communicating information
- 2: Meta-information about the conversation

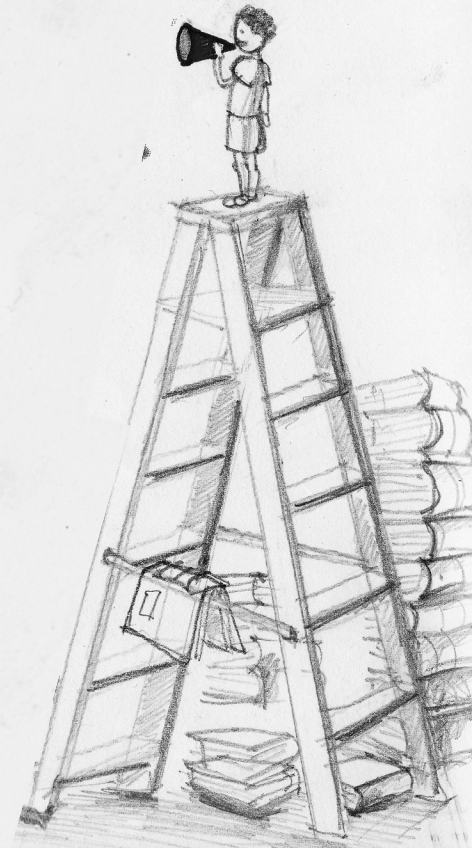
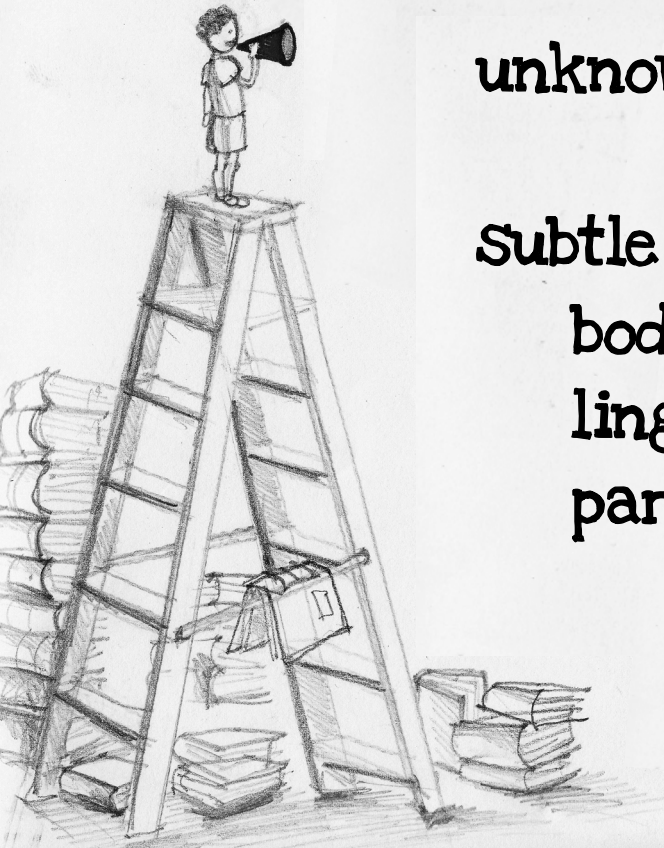
unknowingly & unwillingly

subtle signals, e.g.,

body language

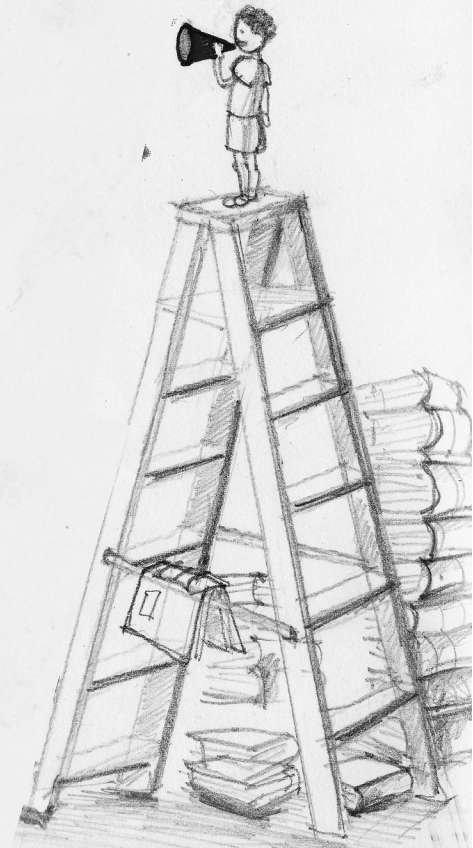
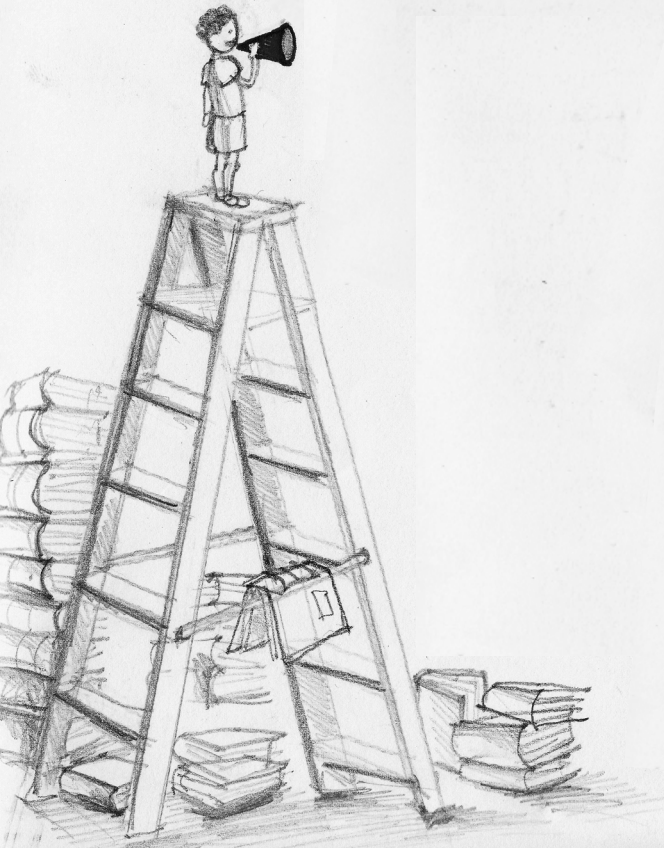
linguistic matching

paralinguistic cues



Meta-conversational channel

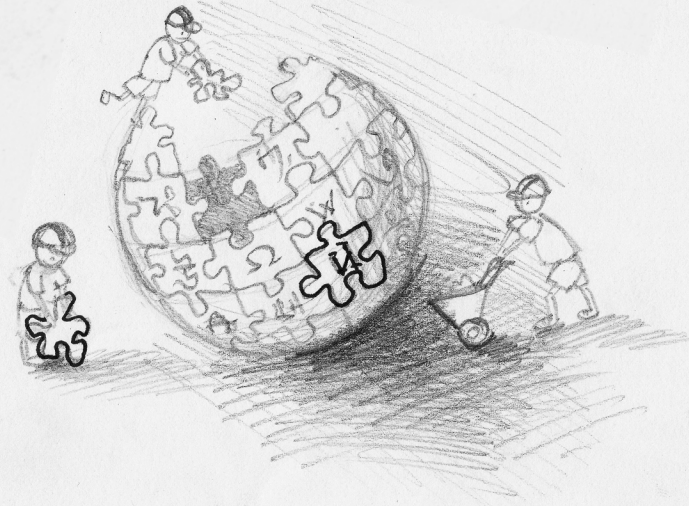
Off-line: conversational intuition
aligns intentions and perceptions (Tannen, 2005)



Meta-conversational channel

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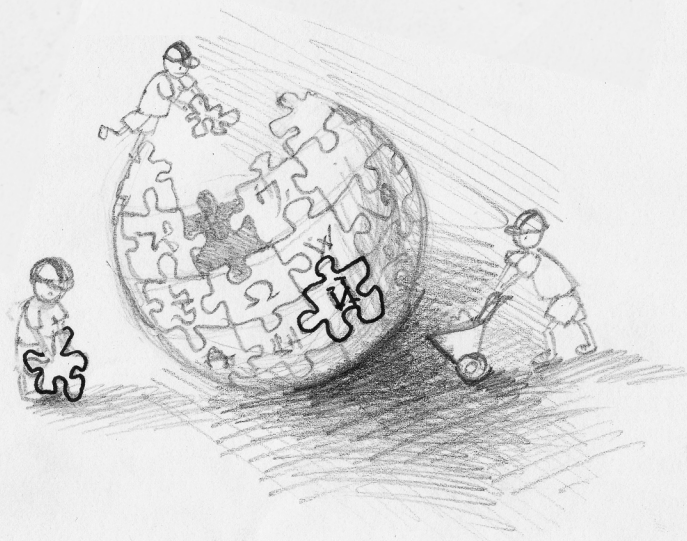
On-line: accustomed signals are muted
we aren't (yet) attuned to new signals



Lost meta-conversational channel

-> misaligned intentions and perceptions

Perplexing Conversational failures online:

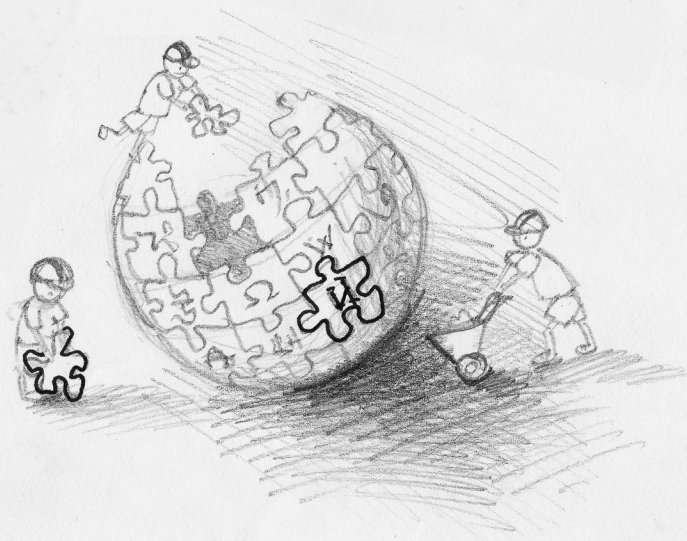


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› 40% users personally harassed online (Pew Survey, 2014)



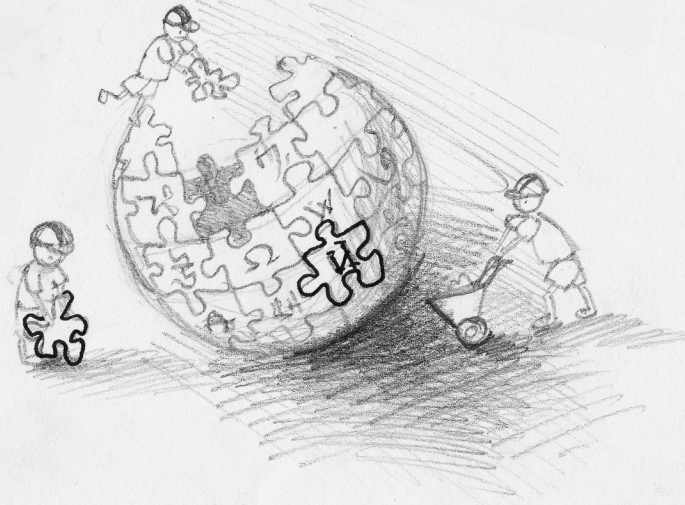
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(Cheng, Bernstein, D-N-M, Leskovec, 2017; Wulczyn et al., 2017)



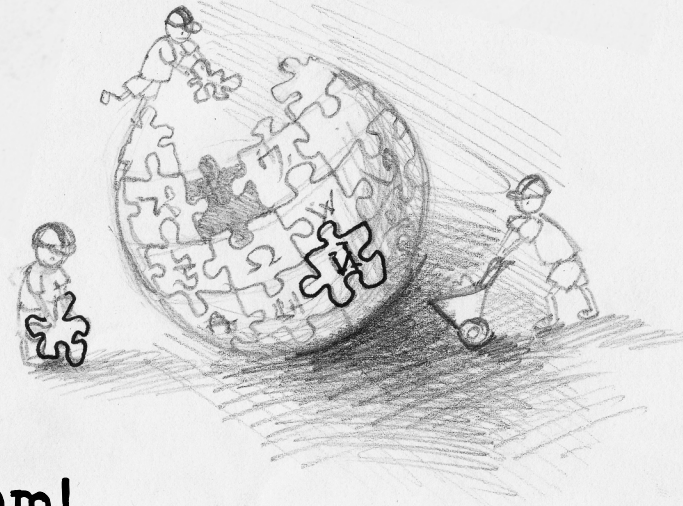
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› 20% of teams perform worse

than the worst individual in the team!

(Niculae and D-N-M, 2016; Fu, Lee, D-N-M, 2017)

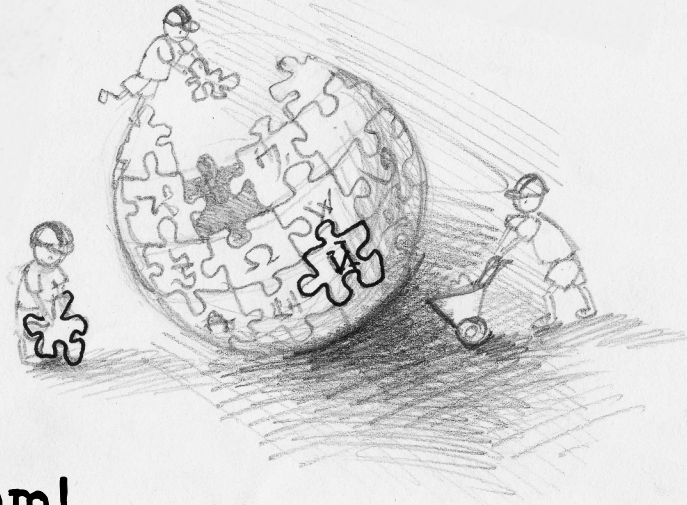
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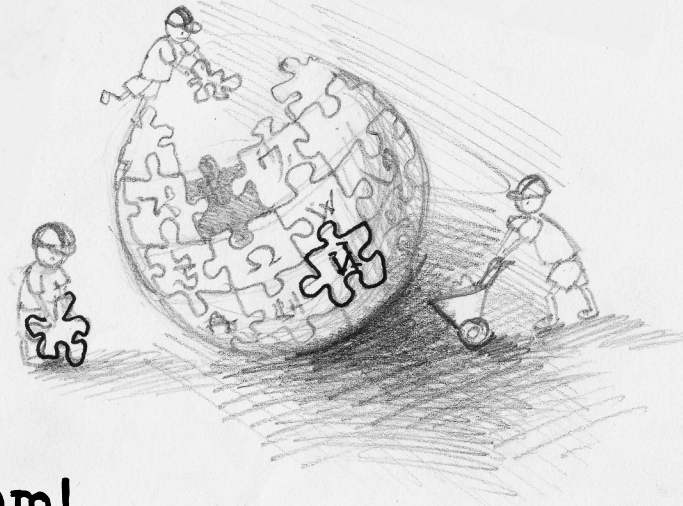
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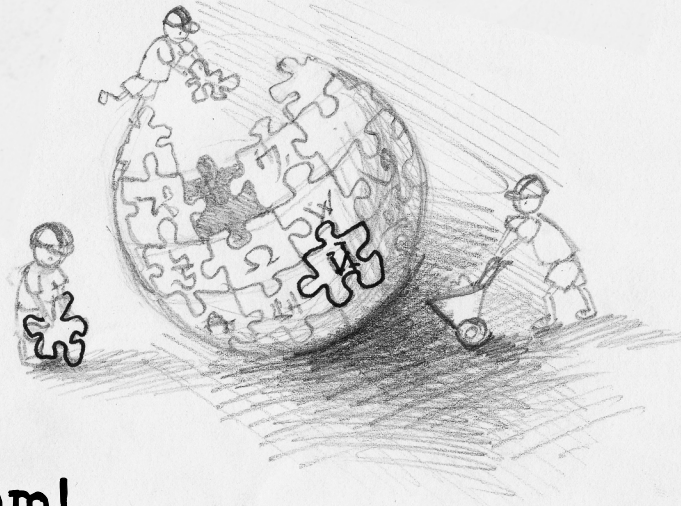
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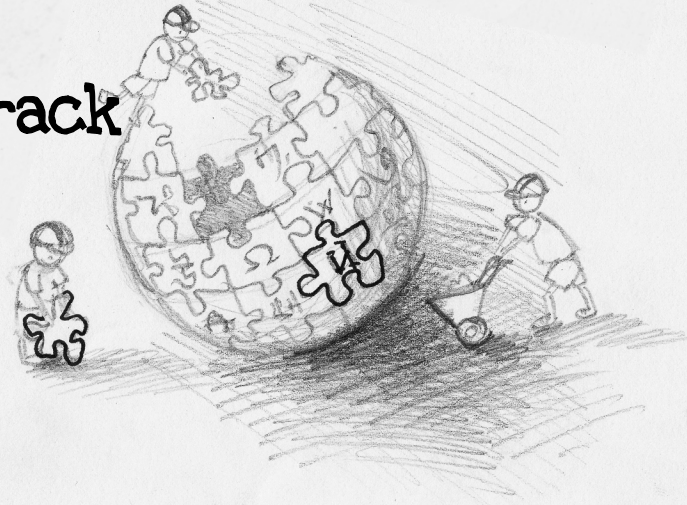
Conversational platforms need to compensate:

Artificial intuition

attuned to the online meta-conversational channel

predict undesired outcomes

act to keep conversations on track



Lost meta-conversational channel

-> **misaligned intentions and perceptions**

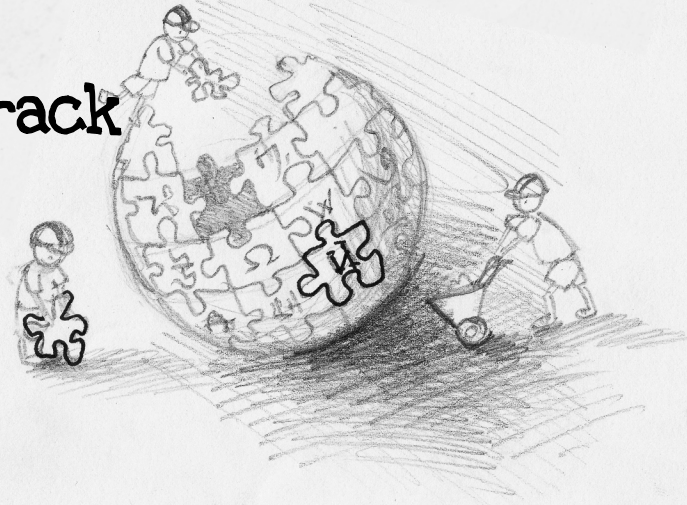
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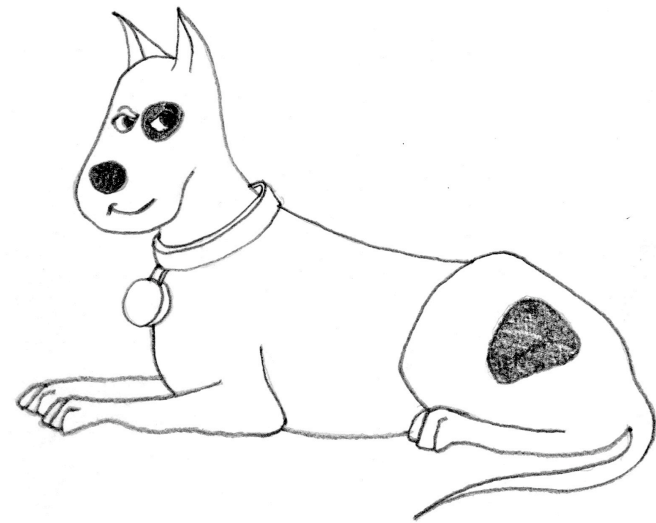
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Misalignment of intentions

"Linguistic harbingers of betrayal"

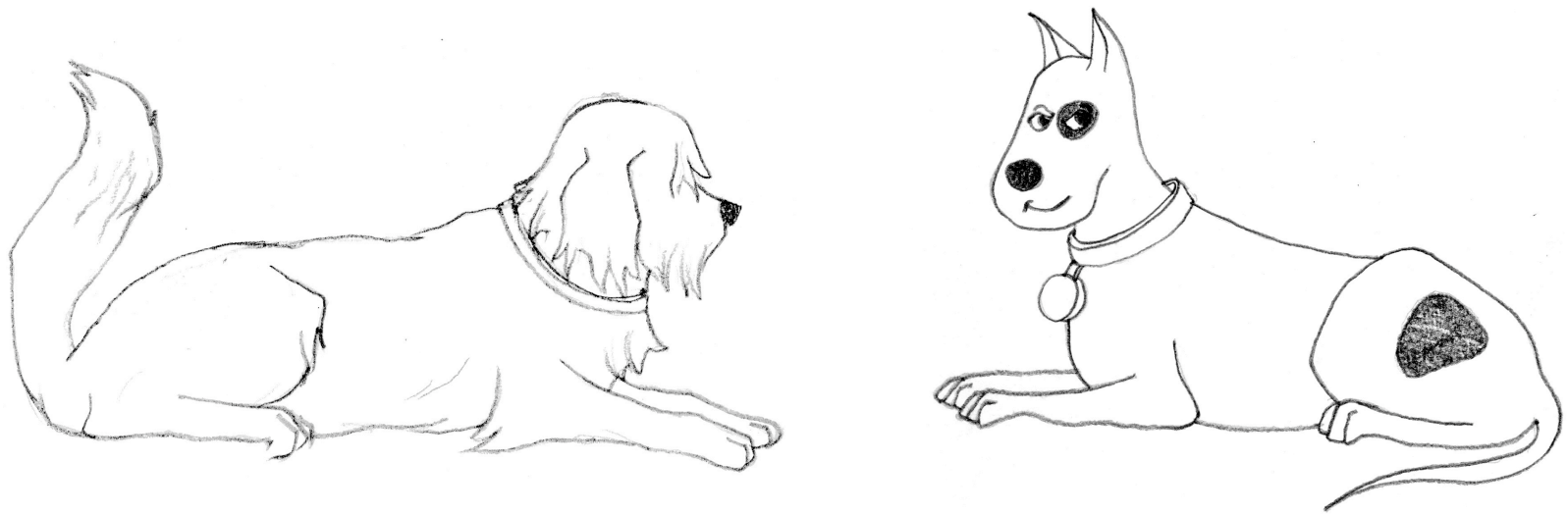
(Niculae, Kumar, Boyd-Graber, D-N-M, 2015)



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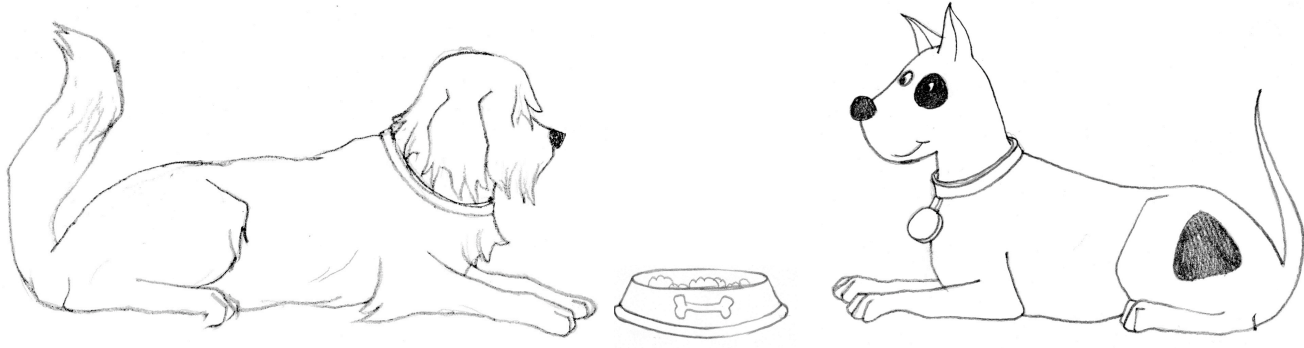


**Betrayal presupposes a trust relation
(unlike deception)**

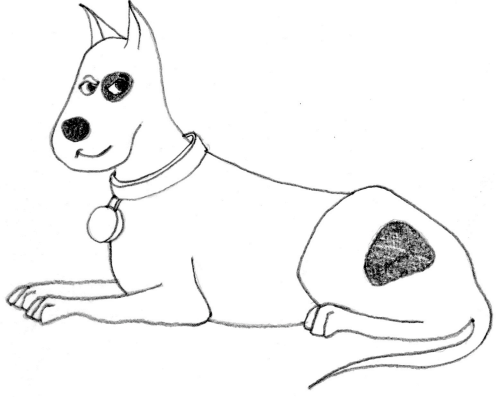
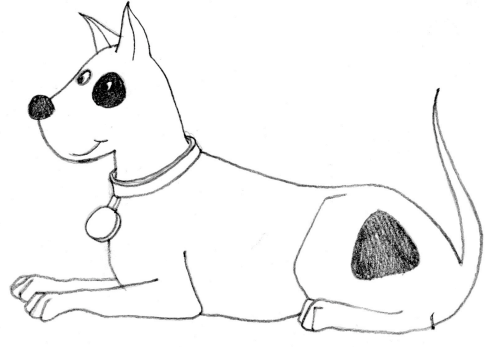
Work on deception:

[e.g., Newman et al. 2003, Hancock et al. 2007, Mihalcea & Strapparava 2009, Ott et al. 2011]

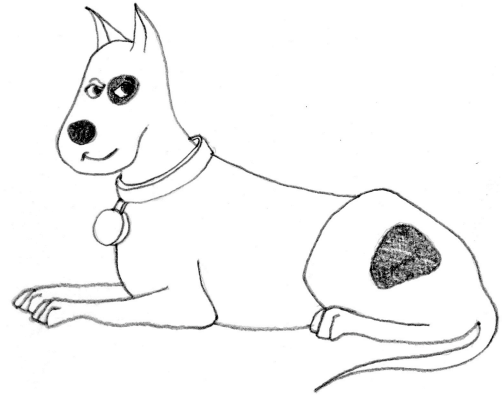
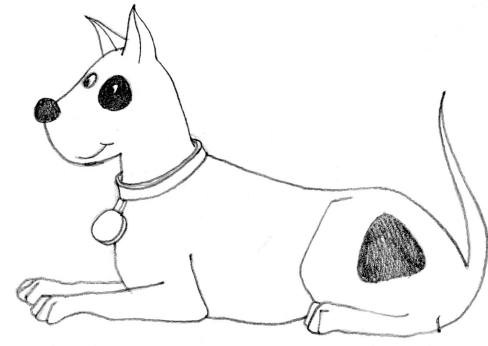
Friendship



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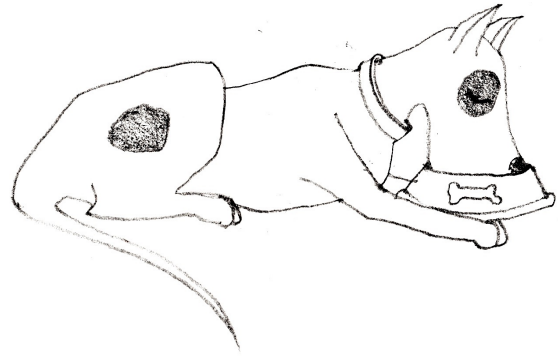
Betrayal

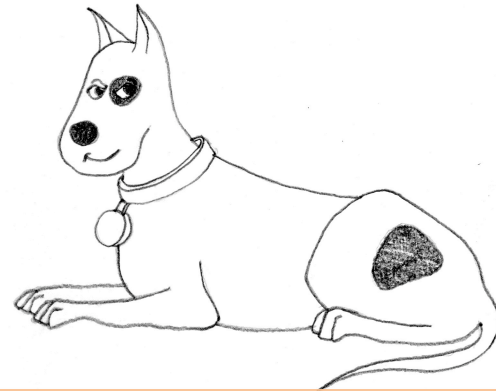
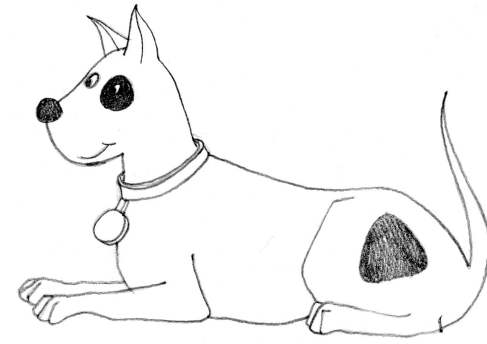
Friendship



Betrayal

Enmity





Can we detect signals of **upcoming** betrayal?



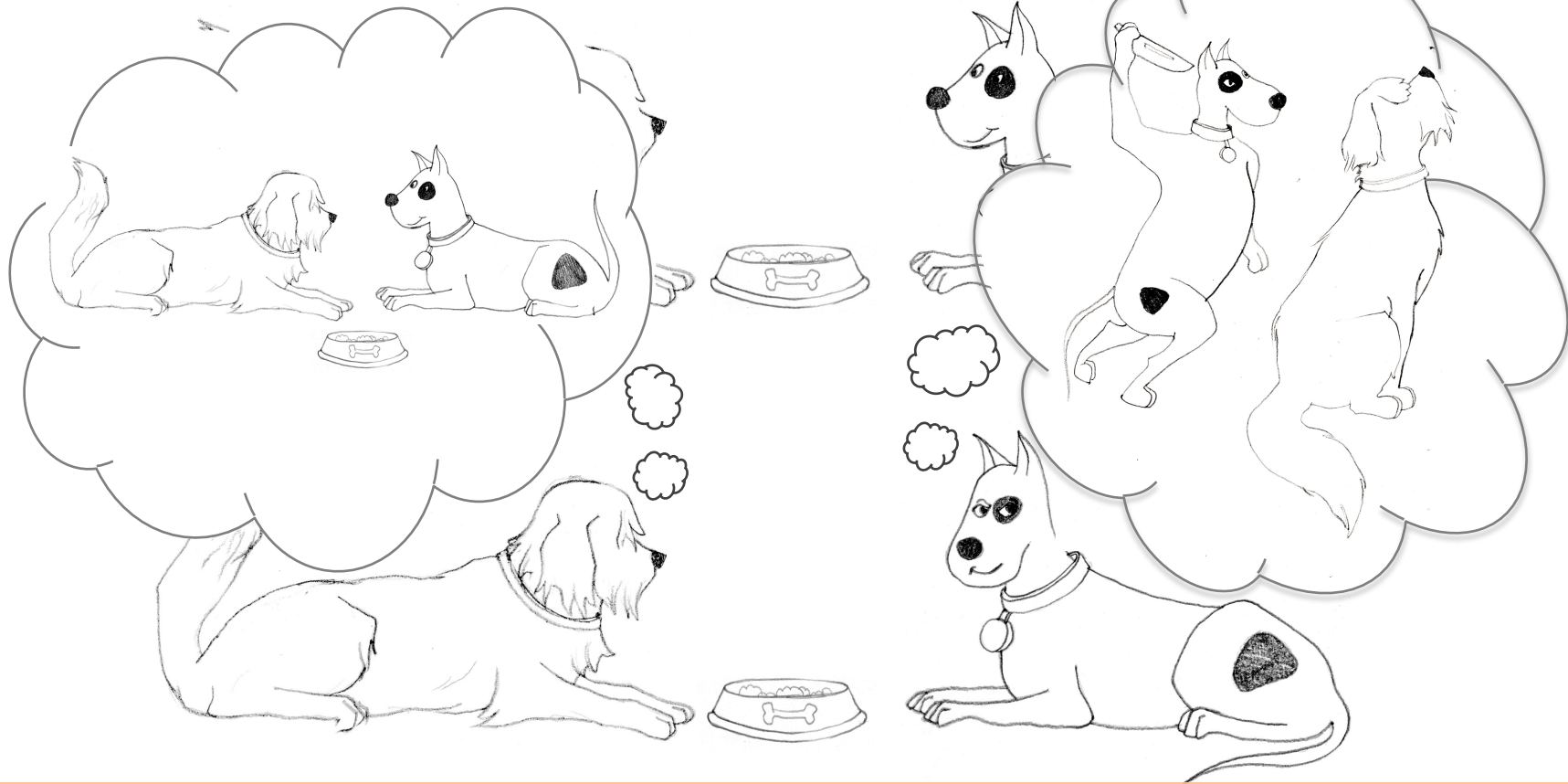


Can we detect signals of **upcoming** betrayal?

Tricky because:

- › betrayers actively hide it

Friendship

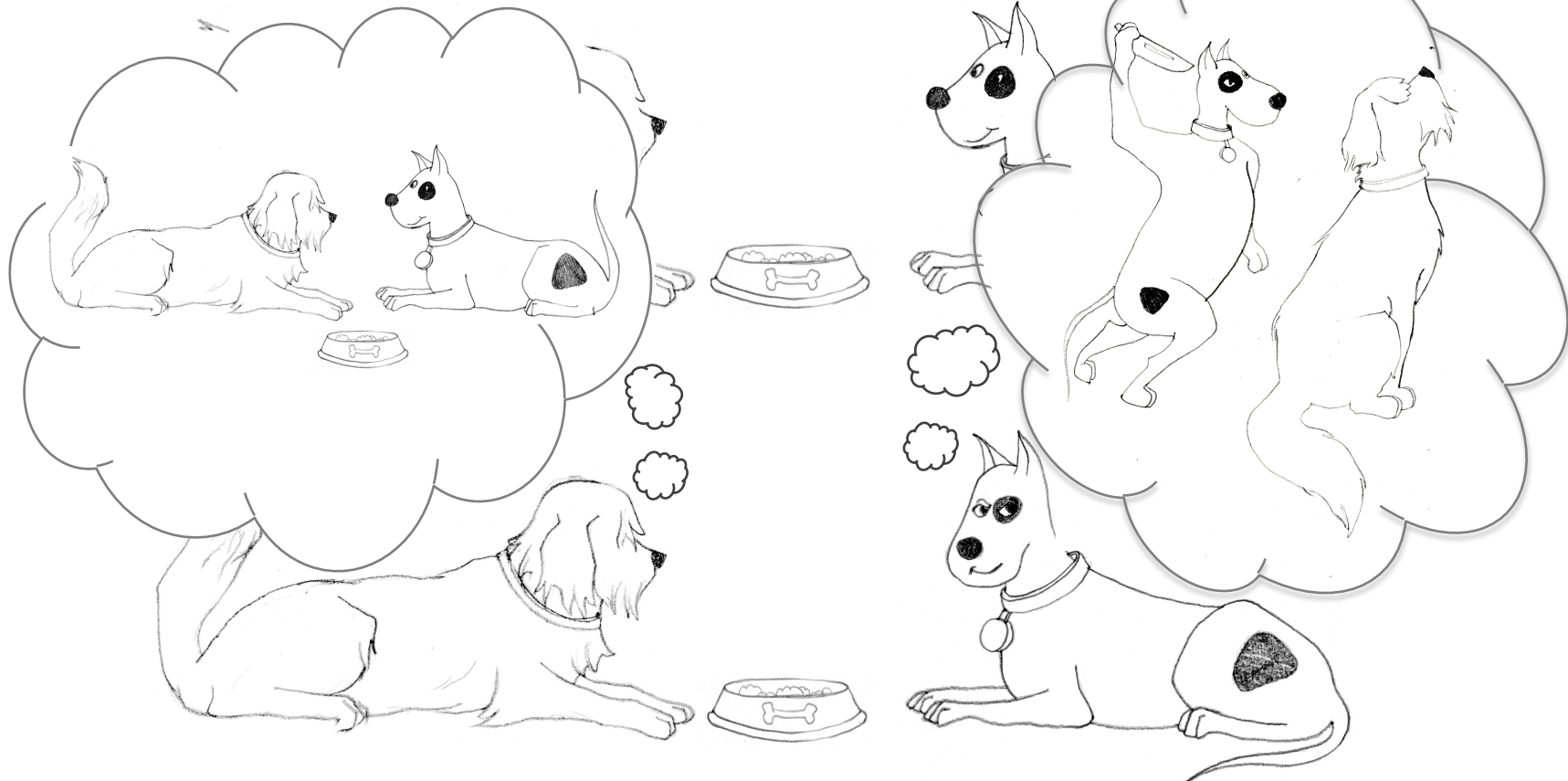


Can we detect signals of **upcoming** betrayal?

Tricky because:

- › betrayers actively hide it
- › victims do not see it coming

Friendship

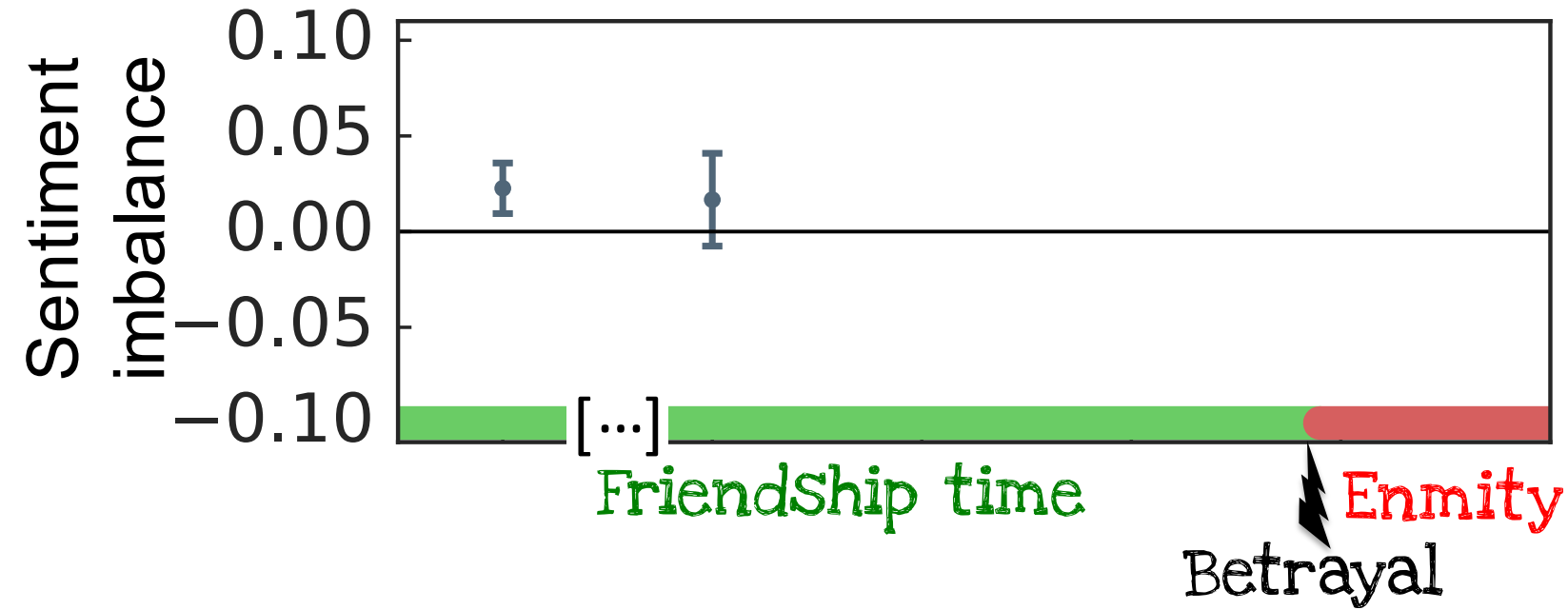


Can we detect signals of **upcoming** betrayal?

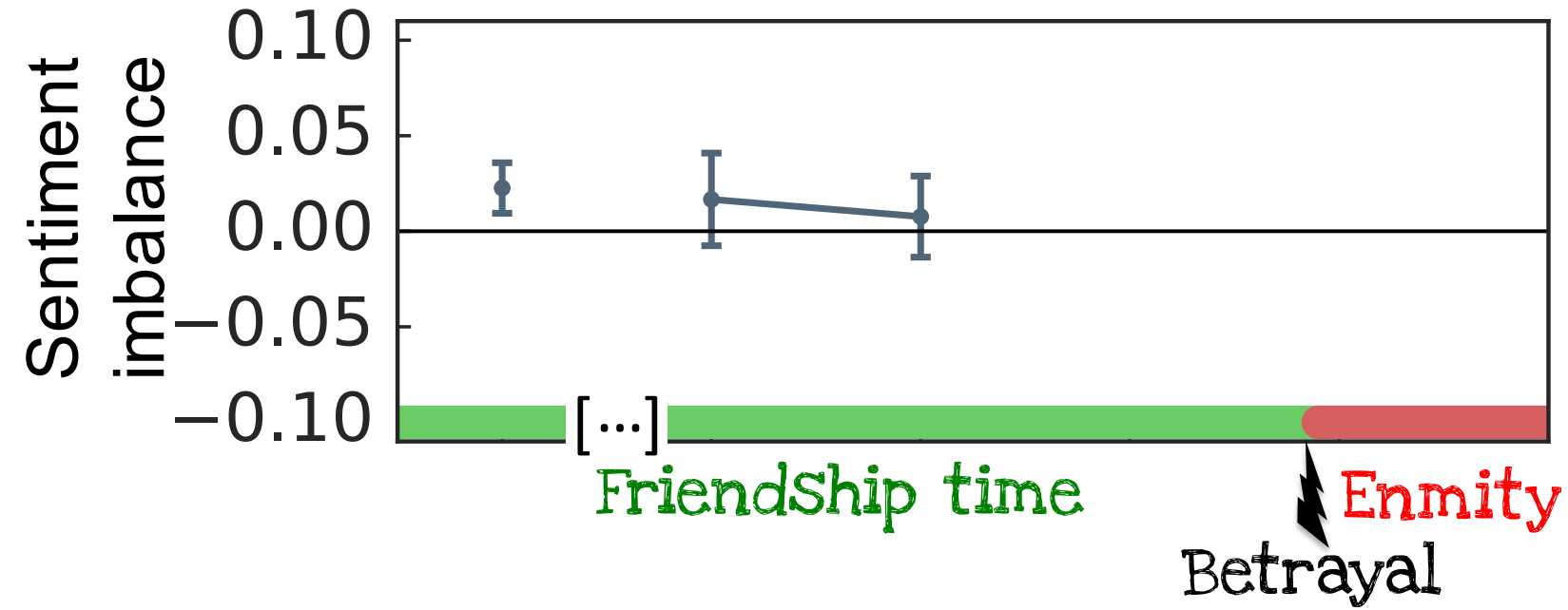
Main intuition:

misalignment will be reflected in
imbalances in conversational patterns

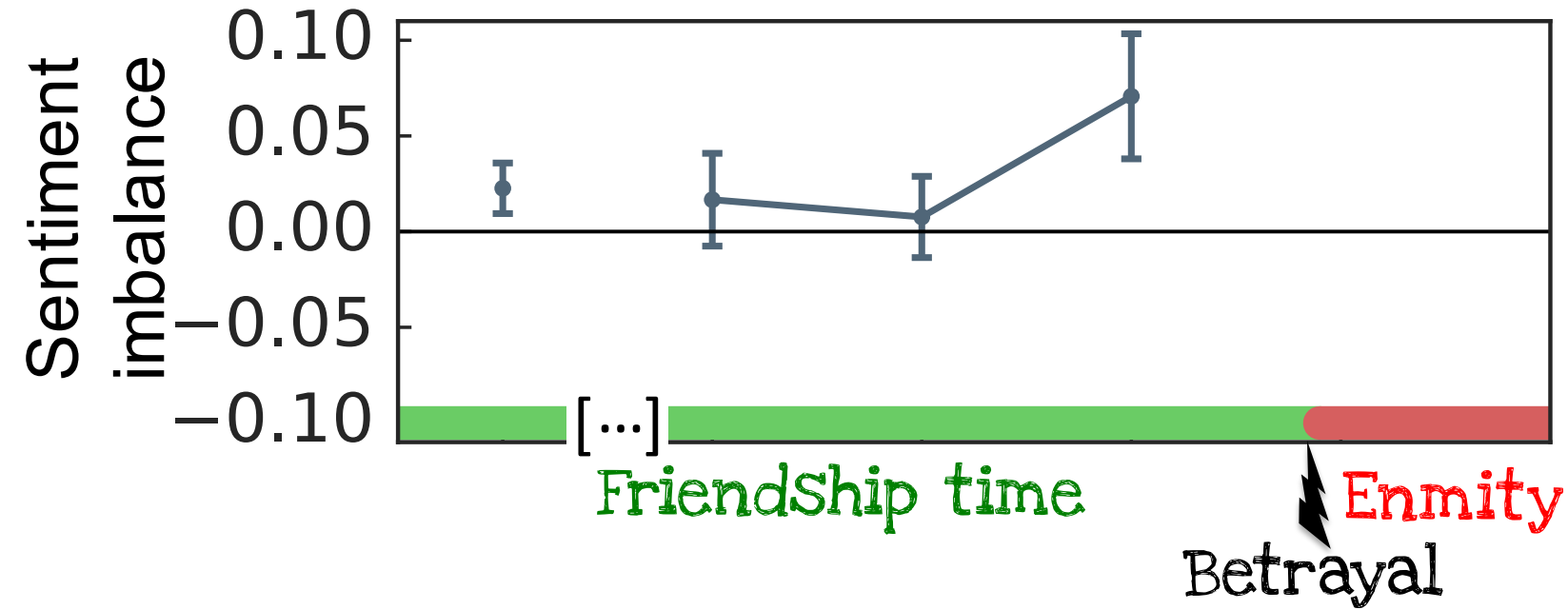
Misalignment of intentions via conversational imbalance



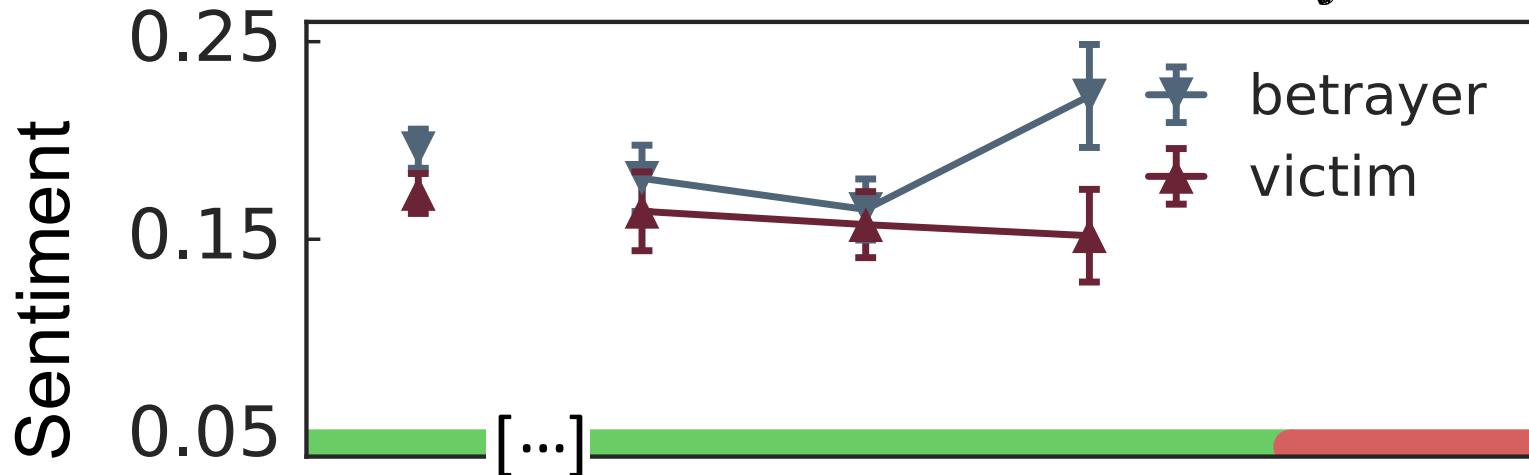
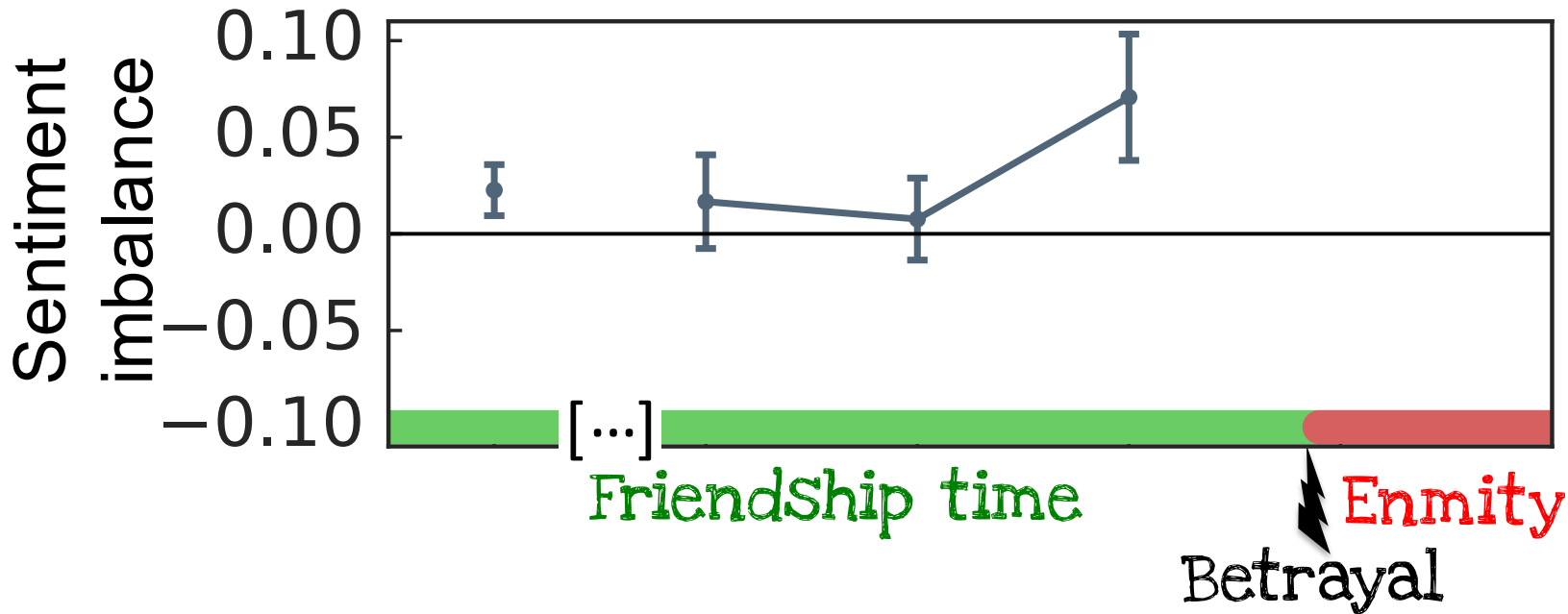
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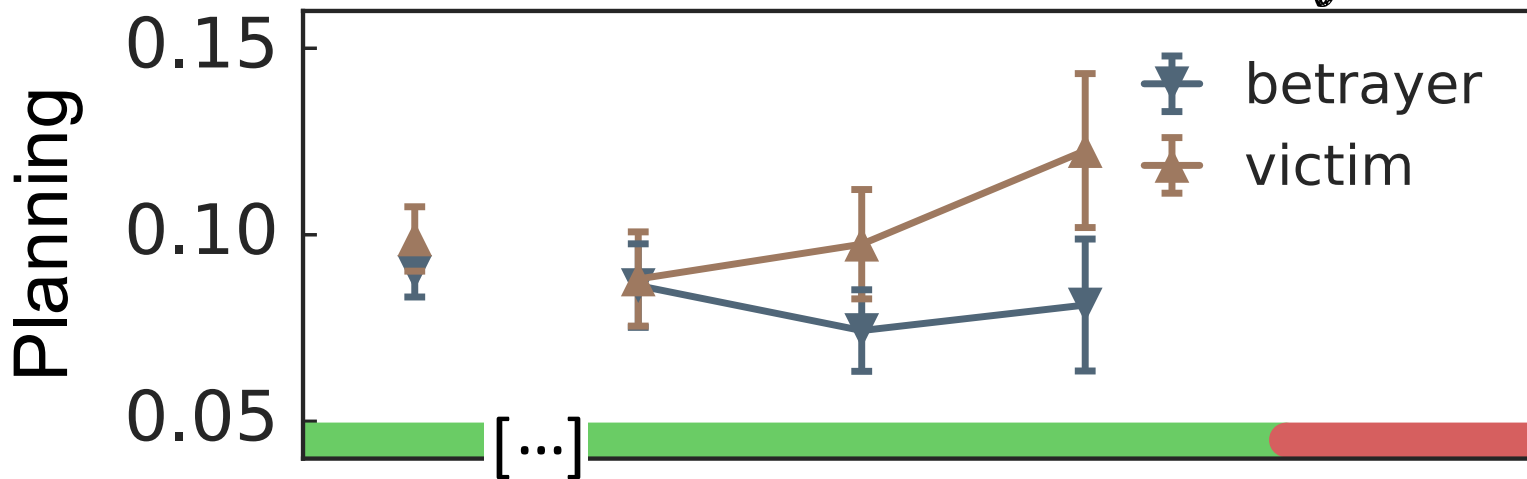
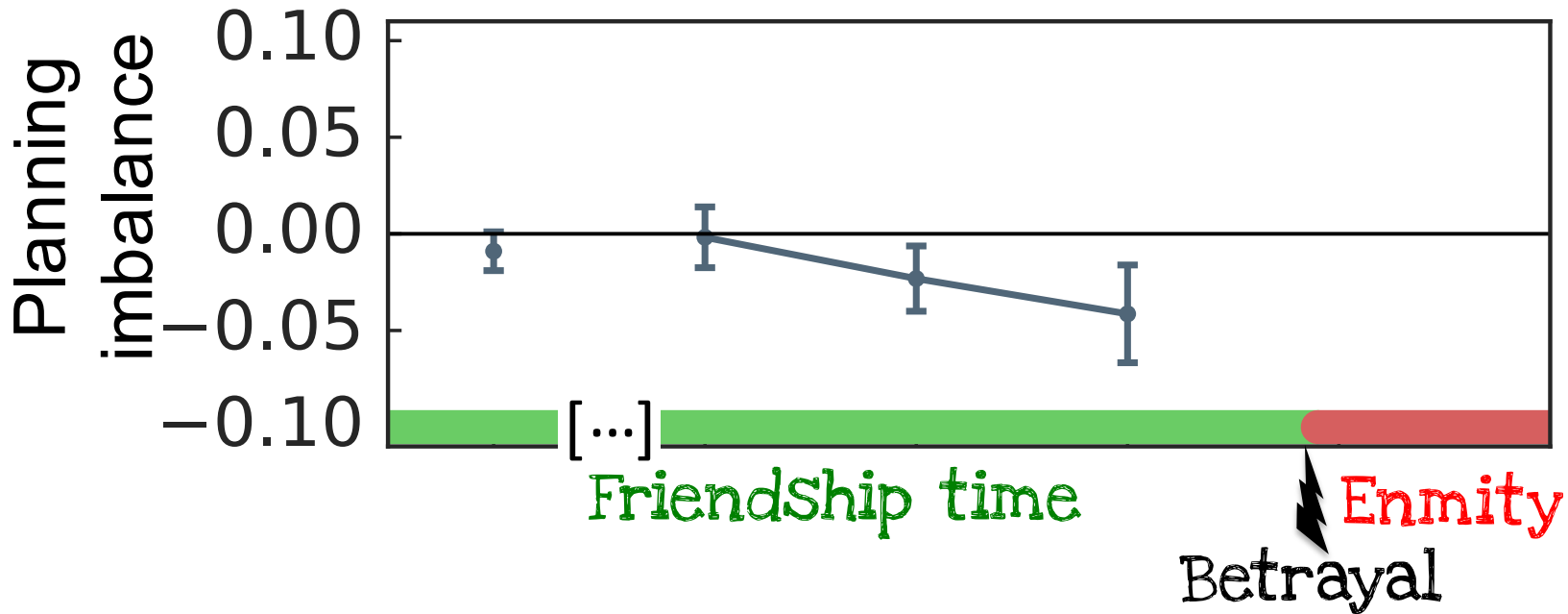


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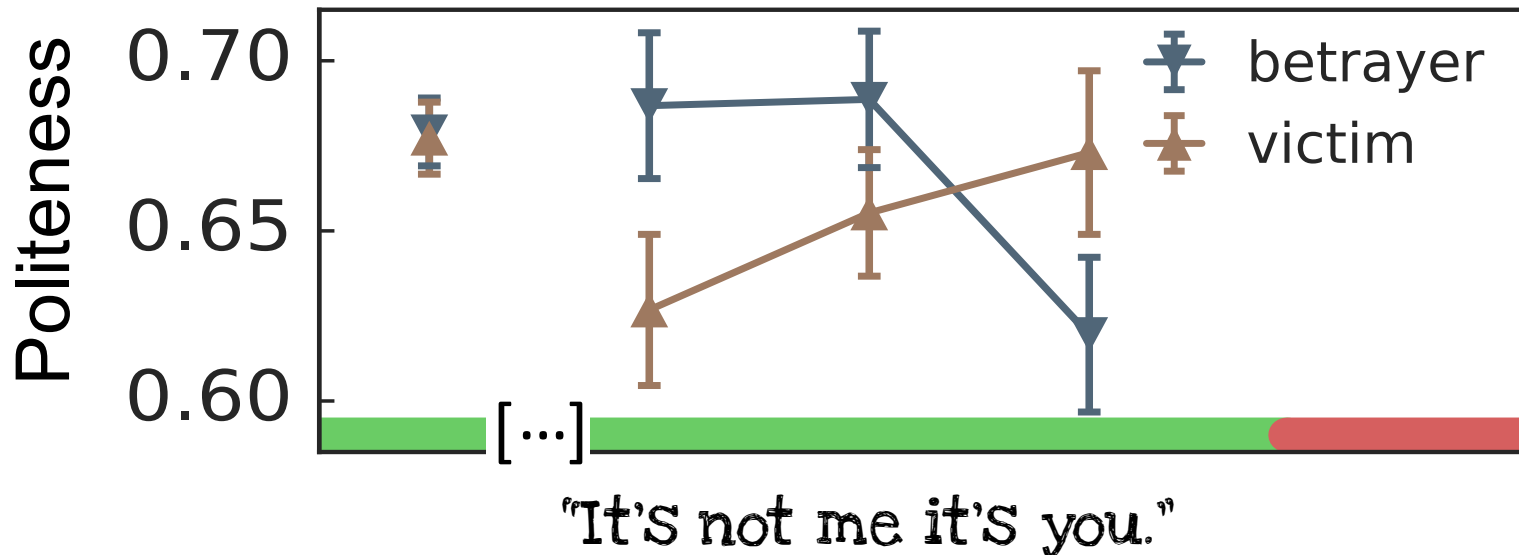
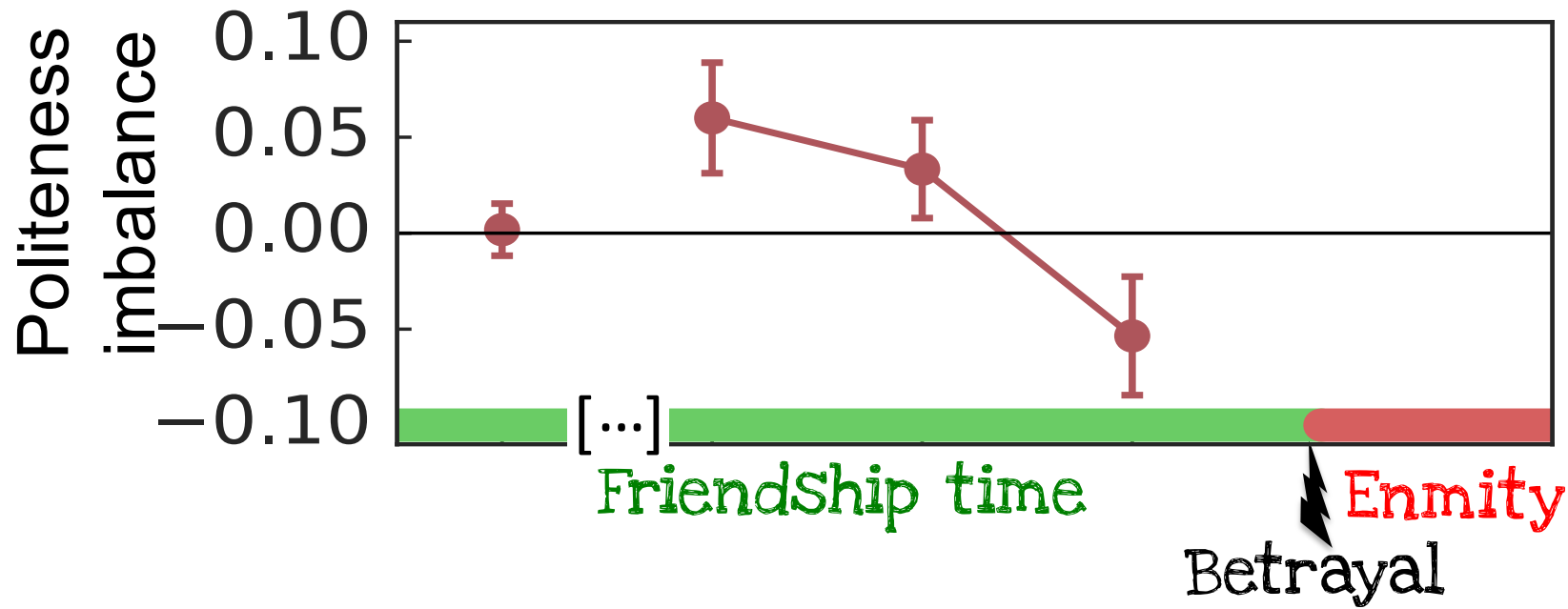
cf. Gottman (1993): stable relations are affectively balanced

Misalignment of intentions via conversational imbalance

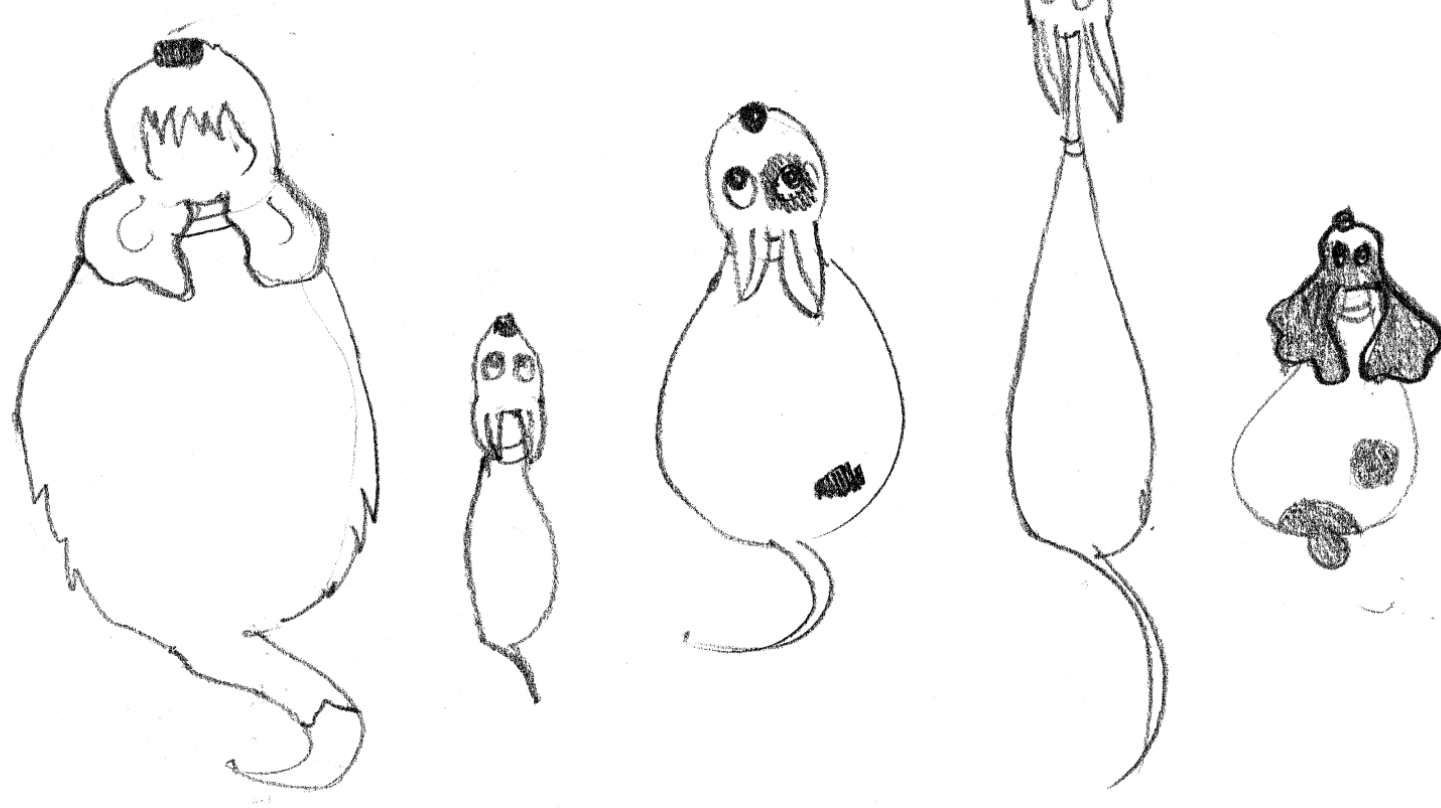


cf. Christensen (1990): Demand-withdraw pattern

Misalignment of intentions via conversational imbalance



Pannel



Thank you

